

A New Era for Accessibility

An impressive wave of computer-based technologies will soon help millions of people with disabilities communicate, learn, and become more productive workers. Learning professionals are invited to catch this global tide.

By Paul Harris

Individuals who are blind or visually impaired can now listen to content as fresh as their morning newspaper in the world's most widely used "talking book" format. The new capability will soon benefit millions of people with visual impairments by enhancing their ability to read and learn.

Thanks to a recent add-on to Microsoft Word, any Word document can be converted with a single click into the globally accepted DAISY Standard for reading and publishing multimedia content, where it can be instantly enjoyed, even on a portable MP3 player.

The application, upgraded in January, was created through an open source project with Microsoft, Sonata Software Ltd, and the Digital Accessible Information SYstem (DAISY) Consortium. It joins a rapidly evolving landscape of accessible technologies that have profound implications for learners and the learning profession.

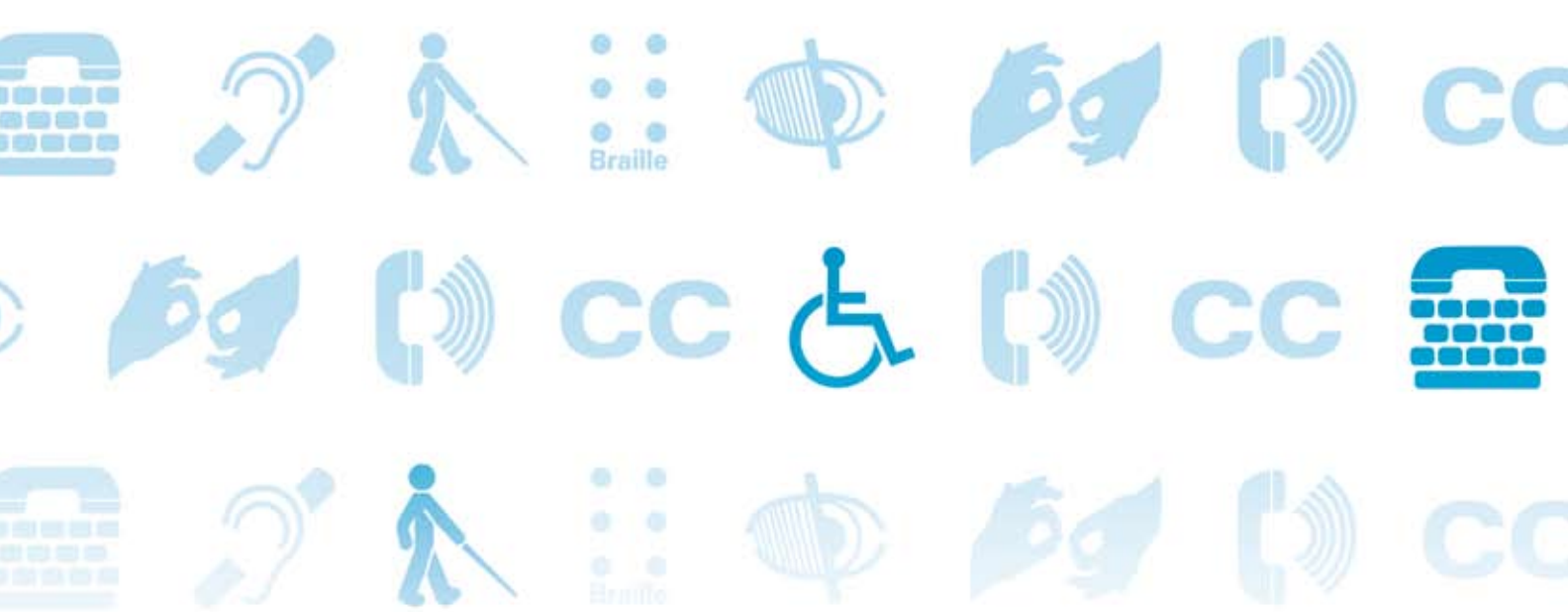
"The Save-as-DAISY plug-in is an exciting advance for disabled individuals," says Deborah Kaplan, director of the Accessible Technology Initiative at California State University. Kaplan foresees a day when the electronic environment is designed and built to accommodate individuals with all sorts of physical and mental limitations, and when providing a fully accessible workplace is a priority for every employer.

That day may be closer than we think. Activities underway throughout the accessibility universe are improving the quality of life for every person with a physical or learning-related disability. A dizzying array of innovations is aimed at ensuring maximum access to the Internet and other communication tools for those who face barriers in their ability to use them.

That marketplace pull is being matched by a policy push that has caught the attention of employers, Internet marketers, and others. It includes legal and regulatory initiatives that are increasing the worldwide urgency for design and adoption of new assistive technologies.

In short, accessibility is becoming the new green.

One important driver for these advances is California State University itself, where vision, expertise, and muscle are being applied to the challenge. Using the clout of its 23 campuses, CSU's Accessible Technology Initiative pursues every opportunity to impact learning, from requiring technology



vendors to meet accessibility compliance requirements to pioneering approaches for students to receive and perceive learning in the classroom. It is also promoting universal design in all future-learning-related products.

For example, the following recent accessible technology advances have been introduced with input from CSU's initiative:

- Virtual classroom. Learning provider Elluminate Inc. offers a web conferencing platform called Elluminate Live! that features closed captioning functionality for learners who are hearing impaired as well as enlarged, easier-to-see video and other accessibility features.
- Blackboard's Version 9. The latest upgrade of Blackboard's online learning platform, called Blackboard Learn, provides a full range of accessibility features such as embedded text to accompany graphics.
- Apple and Google. Apple Inc. has added accessibility features to its iTunes U, a dedicated area of the iTunes Store for content provided by colleges and universities. Apple also promises to ensure full accessibility of iTunes software and the

rest of the iTunes Store to people with blindness using both Mac and Windows operating systems by June 30, 2009. Similarly, Google has added accessibility features in its Google Documents and Calendar.

Another example of product conversion, unaffiliated with CSU, is a Braille printer offered by Oregon-based ViewPlus Technologies that embosses Braille along with a printed page from HP Inkjet cartridges. Called the Emprint, the product is produced under a partnership between ViewPlus and HP.

When it comes to promoting accessible technologies (AT), Kaplan and her staff think big. "We're trying to institutionalize AT so it becomes part of everybody's job," she says. "After all, it's as big an issue as security, and it should be implemented on an equally broad scale."

Her message to employers is that when they purchase enterprise software or a learning management system, all of their employees must interact with it. "It simply has to be accessible. You're losing out on talent when it's not."

Benchmarks are achieved in her opinion when an innovation first

described as an assistive technology moves seamlessly into the mainstream. Examples include DragonDictate, the original speech recognition application from Dragon Systems.

(It should be noted that in the parlance of the profession, accessibility results from the adoption of assistive technologies, such as a wheelchair ramp to a building. An AT is useful to a wide range of people with and without difficulties and impairments.)

One of the school's campuses, CSU Northridge, even hosts the world's largest annual conference for experts to share the latest AT research, best practices, and products. Its 24th CSUN gathering drew more than 4,000 attendees and exhibitors (www.csun.edu/cod/conf). Another popular conference is held annually by the Assistive Technology Industry Association (www.atia.org).

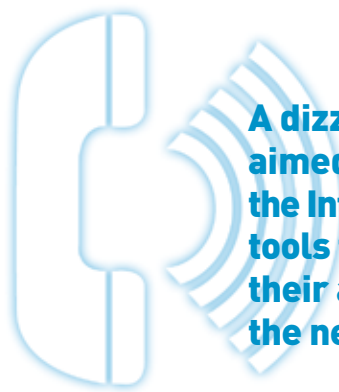
"When discussing the AT field, it's important to include the large population of individuals with learning disabilities," says Sam Ogami, an AT expert in Kaplan's office. "It's often not apparent when people have such disabilities, and they won't necessarily tell anyone." New technologies such as DAISY greatly



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benefit people with hidden disabilities such as dyslexia, Ogami says.

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Official motivation

As noted earlier, other drivers of the AT bandwagon are political and legal in nature. Here are five important initiatives certain to impact the adoption of accessibility technologies:

- **White House leadership.** President Barack Obama has promised to make employment of people with disabilities a priority. First, he is expected to restore the budget and leadership of the Equal Employment Opportunities Commission, which was seriously constrained under President Bush. One obvious focus: the dramatic disparity in employment and salaries between individuals with and without disabilities.
- **New teeth to the ADA.** A handy club for the EEOC to wield is a new amendment to the Americans with Disabilities Act. Effective Jan. 1, the provision clarifies and strengthens the protection of anyone who faces discrimination on the basis of a disability. That includes workers whose employers discriminate based on a perception that a worker is impaired, regardless of whether the worker has a disability.
- **'508 Refresh.'** Section 508 of the Rehabilitation Act requires federal agencies to ensure that employees and others with disabilities have the same access to information and data as those who don't.

It means that federal agencies must procure the most accessible product on the market, a clear business incentive for suppliers that has spawned a spirit of collaboration by the European Union and other governments. A proposed revision of the section, dubbed "508 Refresh," has prompted a drive for consistency of AT rules around the globe.

- **The United Nations.** An international push is coming from the United Nations Convention on Rights of People with Disabilities. The initiative is expected to produce an ADA-type policy on a global scale to advance the rights and protect the dignity of people with disabilities.
- **Accessible websites.** In a closely watched lawsuit with implications for businesses, Target Brands has settled litigation by the National Federation of the Blind for maintaining an inaccessible website. After losing in federal court, Target agreed to pay \$30 million and meet specific requirements regarding web accessibility. The suit, filed under the ADA, marked the first test of the statute for relevance to an Internet-based business.

IBM steps up

While such inducements are certain to force-feed the AT marketplace, AT advocates say it's time for product and learning content developers—and their customers—to embrace accessibility for the right reasons.

"We need to change the mindset of courseware designers, authoring tool developers, and others so that full accessibility becomes second nature,"

says Heather Hasner, global accessibility lead for IBM's Center for Learning and Development. For example, voice recognition software now creates accurate captions and transcripts of spoken learning content, and it should be part of everyday learning tools, she insists.

That will only happen when content developers view people with disabilities as a vital new audience, and when accessibility guidelines are established for authoring tools, Hasner says.

IBM is helping to pave the way with a mindboggling array of activities aimed at making technology and information easily accessible to people with visual, cognitive, hearing, and motor disabilities. Leading those efforts is IBM's Human Ability and Accessibility Center, an entity that has evolved from its 20-year-old Special Needs Group, which pioneered advances including the Home Page Reader self-voicing web browser.

With the center's help, Big Blue aggressively integrates accessibility into its product development process, conducts vital research and development, and participates in numerous outreach activities. They range from building accessibility into Web 2.0 technologies, such as standards and tool kits for widgets, to IBM's Easy Web Browsing tool that improves webpage readability for people with limited vision.

IBM's software advances include WebAdapt2Me, a tool that enables people with vision, cognitive, or hand limitations to customize the way webpages are presented. Accessibility features are also included in popular software programs including its Lotus Symphony desktop application and Lotus Learning Management System.

To help broaden the reach of ATs, IBM contributes its Accessibility Tools Framework to the Eclipse Foundation—an open source community focused on developing a universal platform of frameworks and tools for the creation of software. It enables developers to build and use various types of tools such as those for accessibility compliance validation and alternative interfaces for people with disabilities.

Other research and development activities at IBM include development of a Web-based tool for the blind to access virtual worlds such as Second Life. A

prototype technology provides an interface with virtual worlds that enables people who are blind to navigate, interact with, and understand the objects in the virtual world.

The project, dubbed the Virtual Worlds Interface for the Blind, also relies on a social network of sighted users who add the descriptive information to objects and places in Second Life. The project has been released as a trial on IBM's alphaWorks.

As with most AT initiatives, the benefits from the project will be broad, predicts Phill Jenkins, a business executive at IBM Research. "Just as curbs designed for wheelchairs benefit others in the real world, we're creating 'electronic curbs' within virtual worlds that assist learners of all sorts, including second-language learners," he states. When people can see and hear information at the same time during a virtual 3D learning session, better learning is achieved, Jenkins says.

Infrastructure challenges

Meanwhile, a coalition of information and accessibility technology companies is laying the groundwork for the next generation of accessible web-based products. Called the Accessibility Interoperability Alliance (AIA), the global society promotes collaboration of the design and delivery of solutions to longstanding compatibility challenges confronting the AT marketplace.

"We recognized that there were good pockets of activity but little collaboration across the industry," says Rob Sinclair, Microsoft's director of accessibility and a charter member of the AIA. He says collaboration is required to solve many problems, especially the standardization of certain application program interfaces (APIs) so products can interoperate seamlessly.

For example, it's important that any assistive technology, such as a screen reader for the blind, be able to collect information from an application and share it with customers. Solving such user interface problems is the assignment of one of AIA's four working groups.

Another group promotes the consistency of keyboard shortcuts for AT products used with web browsers, especially for Web 2.0 applications.

Yet another seeks to align the leading accessibility APIs used in the industry today, such as Microsoft's UI Automation and IBM's IAccessible2, so that they can interoperate. This alignment will enable the mapping of information among these accessibility models.

As part of that activity, Microsoft and Novell Inc. have partnered to help software developers create and deliver accessible products for Windows and Linux platforms. Sinclair says the project will dramatically improve computer access to the next generation of software applications for people with disabilities, especially those who are blind.

Microsoft pledges not to assert any patents necessary to implement its UIA specification, regardless of platform, in the open source and proprietary software communities. Novell's compatibility efforts also will be open source and will make the UIA framework cross-platform.

Microsoft has for years incorporated the latest accessibility features within its operating systems, of course. The backbone of that effort is its Microsoft Active Accessibility technology, which is designed to improve the way accessibility aids work with applications running on Windows. Along with screen readers, those aids include visual indicators for people with hearing loss and software to compensate for motion disabilities.

Microsoft maintains AT vendor partnerships with some 200 companies. "We divide the AT industry into IT providers, applications developers, and specialized assistive technology vendors," says Sinclair. "They control both ends of the customer experience: the application for them to use, and the assistive technologies that transform that application into a different experience for people with unique requirements."

Another important player is the Worldwide Web Consortium (W3C), an international organization that develops specifications, guidelines, software, and tools to help the Internet reach full potential. Its Web Content Accessibility Initiative (WAI) is a forum for industry, the disability community, researchers, and governments to develop solutions under the W3C Process.



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High on the Initiative's agenda is the Accessible Rich Internet Applications Suite (ARIA), a specification to make Web applications and content fully accessible. ARIA addresses challenges confronting developers such as defining new ways to provide functionality to assistive technology.

It all amounts to an impressive campaign to improve the lives of people with disabilities. Yet as usual, the actual beneficiaries clearly extend beyond the target audience. One major focus is certain to be the needs and whims of aging baby boomers, predicts IBM's Phill Jenkins, who says that as boomers age, they will fully expect to continue using computers and other familiar devices.

"We will end up with a large population demanding accessible interface," Jenkins says. "The real profit for developers will come in when boomers begin driving the market." **T+D**

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